DOCUMENT RESUME

ED 261 549 FL 015 217

AUTHOR Wexler, Kenneth; Chien, Yu-Chin
TITLE The Development of Lexical Anaphors and Pronouns.
INSTITUTION Stanford Univ., Calif. Dept. of Linguistics.
PUB DATE Aug 85
NOTE 13p.; Papers and Reports on Child Language Development, Volume 24, p138-49, Aug 1985. For related documents, see FL 202-216.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Child Language; English; *Language Acquisition; Linguistic Theory; *Pronouns; *Sentence Structure; *Syntax; Young Children
IDENTIFIERS Anaphora; *Referents (Linguistics); *Reflexives

ABSTRACT

Two studies examined the development of major properties of reflexives and pronouns in English language acquisition by applying the theory of binding of reflexives and pronouns to potential antecedents in the sentence. The children ranged in age from 2.6 to 6.6 years. In the first experiment, the children were presented with two pictures and were asked which corresponded to a specific possessive construction. The constructions used either a reflexive sentence or a pronoun sentence, each having a different antecedent. The second exeriment used the same task, but with test sentences containing an additional prepositional construction. The third study used an acting-out task similar to a Simon-says game, adding linguistic complexity. The results suggest that children acquire the structural principles governing reflexives gradually and steadily, but that even at the upper end of this age range, they commit many violations of the principles governing pronouns and they show very little improvement from the youngest to the oldest. The findings suggest that, while the essential grammatical knowledge exists in children from an early age, the pragmatic factors are learned later, and performance subsequently improves. This supports the lexical learning hypothesis and a simpler theory of binding. (MSE)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

PRCLD 24 (1985)

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☒ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

ED261549

THE DEVELOPMENT OF LEXICAL ANAPHORS AND PRONOUNS

Kenneth Wexler and Yu-Chin Chien
University of California, Irvine

A major component of adult syntactic knowledge is that class of principles that have come to be called principles of Binding. These principles relate elements in a syntactic structure to other elements in that structure. The principles of Binding interact with principles from other modules of syntactic knowledge to explain a wide variety of particular syntactic structures and phenomena. From the stand-point of the field of language acquisition, then, it is essential to understand the development of the knowledge of binding. This is not only because Binding is an essential part of grammatical knowledge, but also because, from the stand-point of a general theory of language acquisition, it is important to know how central modules develop. In this regard, Binding Theory makes an excellent candidate for study because it is not only central to grammatical knowledge, but it has received extensive and detailed grammatical study and there is a simple and powerful theory which explains a wide range of phenomena.

Binding theory is a general theory which deals with relations between many different kinds of elements in sentences, for example, empty elements, such as traces and null pronouns. The most well-understood phenomena, however, concern "lexical" anaphors and pronouns, namely elements which are not phonetically empty and which have a lexical representation. An anaphor is an element which must have an antecedent in the sentence. An example is a reflexive pronoun, like himself or herself. Pronouns may or may not have an antecedent in the sentence. In beginning a program to investigate the development of binding phenomena in English, we have chosen to start with the lexical anaphors and pronouns, both because their central syntactic properties are quite well understood and because the lexical content seems to make the methodology for studying them more readily available. It is also possible, as has been suggested by Borer and Wexler (in press), that at least some of the binding properties of empty elements mature.

In this paper we will investigate aspects of the development of major properties of reflexives (a major kind of lexical anaphor) and pronouns. The aspects of these items that we will study are those involved with the theory of binding. The relevant principle from the theory of Government-Binding (Chomsky 1981) is Principle A, which we informally reformulate as: A reflexive must be locally bound. From an informal point of view, this means that a reflexive has three crucial structural properties.

(A.1) A reflexive must have an antecedent in the sentence.
(A.2) The antecedent must be in a particular structural configuration (must "c-command" the reflexive).
(A.3) the antecedent must be "local".

FL015217

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
E Clark
Ted Hull
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Thus sentence (1) is ungrammatical because the reflexive herself does not have an antecedent in the sentence, violating property (A.1)

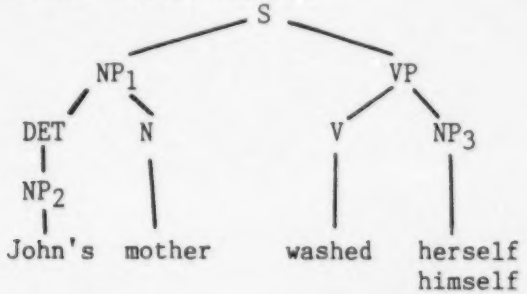
(1) *it rained on herself.

More interesting is property (A.2). The definition of "c-command" is subject to empirical discussion, but for our purposes we can take an early, simple definition. In a phrase-marker, node A c-commands node B if and only if the first branching node which dominates A also dominates B. As an example, consider sentences (2) and (3), which have the phrase-marker drawn in (4).

(2) John's mother washed herself.

(3) *John's mother washed himself.

(4)



In (2), the antecedent of herself is NP_1, John's mother. The first branching node which dominates NP_1 is S, and S also dominates NP_3, which is herself. Therefore NP_1, the antecedent, c-commands herself, and property (A.2) is met. Sentence (2) is grammatical. For sentence (3), because of gender, the only possible antecedent of himself is John's, NP_2. However, NP_2, John's, is low down in the tree. The first branching node which dominates NP_2 is NP_1. But NP_1 does not dominate himself (NP_3). Therefore the antecedent of himself does not c-command himself. Sentence (3) is ungrammatical.

Property (A.3) says that the antecedent of a reflexive must be local (more technically, must be in the reflexive's governing category). The exact definition of "local" involves much technical specification, but we will only consider the simplest cases, where "local" can be taken to mean, "in the same clause as". Examples appear in (5) and (6).

(5) Mary washed herself.

(6) *Mary thought that John washed herself.

Sentence (5) is grammatical because Mary, the antecedent of herself, is in the same clause as herself. In Sentence (6), however, because of gender, the only possible antecedent of herself is Mary. Yet Mary is not in the same clause as herself. Thus (6) is ungrammatical according to property (A.3): the antecedent of the reflexive in (6) is not local.

In a sense, pronouns have properties opposite from those of reflexives. A pronoun may not have a local c-commanding antecedent. We will not illustrate this in more detail, but will simply show examples.

(7) John's mother washed him

(8) *John's mother washed her

(9) Mary thought that John washed her

In sentence (7), John, the antecedent, does not c-command him, the pronoun. Therefore (7) is grammatical. In (8), however, the antecedent, John's mother, c-commands the pronoun her and is also local (in the same clause as her). Therefore (8) is ungrammatical. In (9) Mary, the antecedent of the pronoun ,c-commands the pronoun her. However, Mary is not local (is not in the same clause as her). Therefore (9) is grammatical.

In these studies we will be concerned with the development of the reflexive and pronoun when there are potential antecedents in the sentence, namely with properties (A.2) and (A.3) for reflexives, and the corresponding properties for pronouns. Without entering into technical defintions, we can simply say that the appropriate principles from Government-Binding Theory are Principle A: A reflexive must be locally bound and Principle B: A pronoun may not be locally bound.

How do the phenomena of binding develop in the child? The strongest hypothesis, which we adopt as a starting point, a working hypothesis, is the Lexical Learning Hypothesis (Wexler & Manzini, in press--for an important related earlier formulation see Borer 1984): Only lexical items have to be learned. This means that Principles A and B are parts of what the child brings to the language learning task, but that, for example, the child has to learn whether a particular lexical item is a reflexive or a pronoun. Therefore the viewpoint from which we will look at data of language acquisition studies is: to what extent are the data consistent with and, in fact, to what extent do they follow from, the notion that the child is learning lexical properties? Of course, we have to be aware of the empirical possibility that the child may not know the relevant principles. It is important to keep the two distinct possibilities in mind.

As a first step in understanding the acquisition of binding, then, we will look at the development of the relevant properties of reflexives and pronouns. It has been claimed (Jakubowicz 1984) that there is a stage (at about 3-4 years) where children treat English pronouns as reflexives, that is, all 3 of the above properties (A1-A3) hold for pronouns for children. However, it seems clear from studies of spontaneous speech that children at this age have the completely free use of the pronouns (e.g. "Johnny petted her", where her has no antecedent in the sentence). These children don't treat the pronoun as a reflexive. Our studies will concentrate, then, on properties of the development of pronouns and reflexives, where there is a potential antecedent in the sentence.

Given our theoretical view-point, there is one methodological point worth noting. We are interested in empirically testing the proposition that at particular ages children have knowledge of particular principles. In order to confirm this proposition, it is necessary that children show performance on relevant sentences that is perfect up to other factors explaining less than perfect performance. In other words, we are looking for absolute percentage correct performance that approaches perfection. The demonstration

that certain items show significantly better performance than other items is itself not sufficient to show that children actually have knowledge of the correct principle.

Study One

In our first study, we tested 129 English-speaking children in Orange County, California, from 2;6 (years;months) to 6;6 of age, with a mean age of 4;6. According to their ages, the subjects were divided into eight groups of six-month intervals, with a minimum number of 15 subjects in each group. We tested each child in a picture-identification task on a set of 16 possessive constructions examplified in (10) and (11).

(10) Cinderella's sister points to herself.

(11) Cinderella's sister points to her.

In (10), a reflexive (herself) is involved; in (11), a pronoun (her) is involved. These test sentences were constructed in such a way that the grammatical subject was composed of a complex NP in which two persons (i.e., Cinderella and Cinderella's sister) were named as the potential antecedents for the following reflexive or pronoun. In both constructions (10) and (11), only the entire NP "Cinderella's sister" c-commands the following pronoun or reflexive. The genitive NP "Cinderella" does not.

In this study, we tested children's sensitivity to the structural c-command relationship between the two possible antecedents and the following reflexive or pronoun. We predicted that if children are sensitive to this structural property and the binding principles A and B, they should be able to co-index the reflexive with its c-commanding antecedent, that is, to refer the reflexive `herself' in (10) back to the complex NP `Cinderella's sister'. They should also be able to co-index the pronoun `her' in (11) with its non-c-commanding antecendent `Cinderella' rather than with the whole complex NP which c-commands the pronoun.

In the picture-identification task, each child was first presented with a picture of two characters corresponding to the names which would later be mentioned in the test sentence. The child was asked to identify these two characters. The child was then presented with a short story (a test sentence) such as (10) or (11), as well as two pictures. One of the pictures matched the story related to the pronoun sentence; the other one matched the story related to the reflexive sentence. The child was asked to point to the picture which tells the story that he/she heard. In this study, we measured children's coreference judgments between the reflexive or pronoun and its potential antecedents. Four different verbs (point to, touch, dress, and wash) were used, two items for each verb, yielding a total of 8 reflexive sentences and 8 pronoun sentences.

Figure 1 shows the developmental pattern of children's correct picture identifications as a function of age and sentence type. The solid line in Figure 1 illustrates children's responses to the reflexive sentences. Children's correct responses to these reflexive sentences grow from the 50% chance level to a level of about 90%

correct. The dashed line in Figure 1 illustrates children's responses to the pronoun sentences. Children's correct responses to these pronoun sentences do not increase in the same rate as to the reflexive sentences. Their correct performance stays around the chance level for the first six age groups of children and increases a little bit in the final two groups. These results indicate that children are sensitive to the structural property of c-command. However, the results also suggest that children show much more of a tendency to violate principle B than to violate principle A, especially in the older groups.

An analysis of children's responses to sentences with different verbs shows that, in general, both for the reflexive sentences and the pronoun sentences, there is no significant difference among the four verbs in difficulty. When dealing with the reflexive sentences, children's responses to the four different verbs stay between the level of 65% correct and the level of 72% correct. When dealing with the pronoun sentences, their responses to the same four verbs stay between the level of 55% correct and the level of 59% correct. The variability of correct responses among these four verbs is fairly small. This indicates that children understand the syntactic structure of the possessive constructions. Children's differential responses to the reflexive sentences versus the pronoun sentences can therefore be attributed to their sensitivity to the structural properties underlying these two sentence types rather than to the situational (or pragmatic) properties underlying each verb.

Study Two

In our second study, we tested 124 children in the same age range as in the first study, using the same task (i.e., the picture-identification task), on a set of 16 prepositional constructions as shown in (12) and (13).

(12) The sister of Cinderella points to herself.

(13) The sister of Cinderella points to her.

Similar to those sentences tested in our Study 1, the sentences tested in Study 2 consisted of a complex NP in which two persons (i.e., Cinderella and the sister of Cinderella) were named as potential antecedents for the following reflexive or pronoun. The complex NP c-commands the following reflexive or pronoun; the NP dominated by the complex NP does not. These sentences (12) and (13) reverse the linear order of the two antecedents as in (10) and (11). In this study we tested children's sensitivity to the same structural property, namely c-command. We also tested their sensitivity to principles A and B. Again, we measured children's performance of coreference judgments between the reflexive and its c-commanding antecedent in (12) and those between the pronoun and its non-c-commanding antecedent in (13).

Figure 2 shows the developmental pattern of children's correct picture-identification as a function of age and sentence type. The solid line in this Figure (2) illustrates children's correct responses to the reflexive sentences. The curve indicates an

Figures

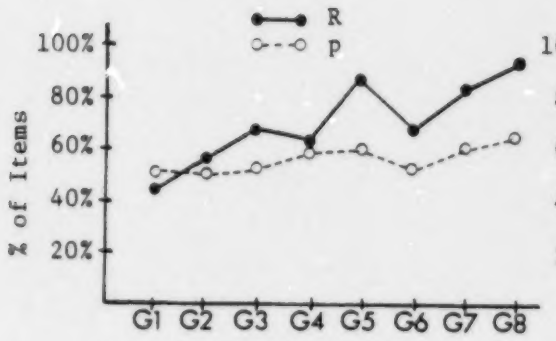


Fig. 1: Study 1: R vs P
(Correct Responses)

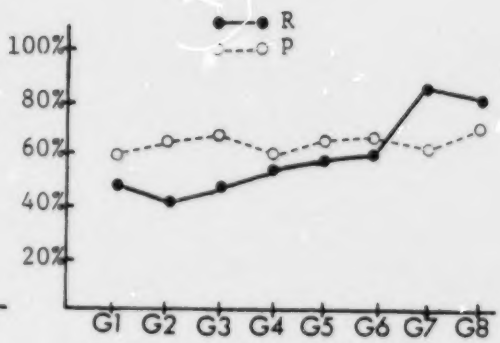


Fig. 2: Study 2: R vs P
(Correct Responses)

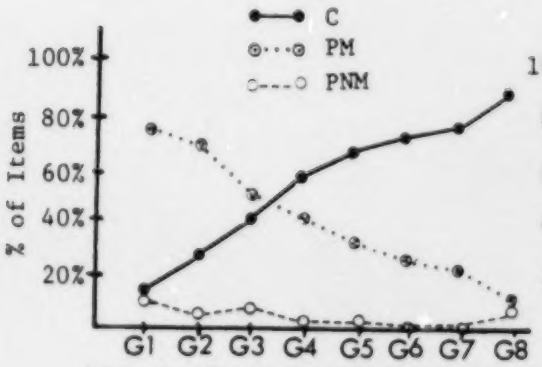


Fig. 3: Study 3: Reflexives
(Amount of Coreference
Judgments)

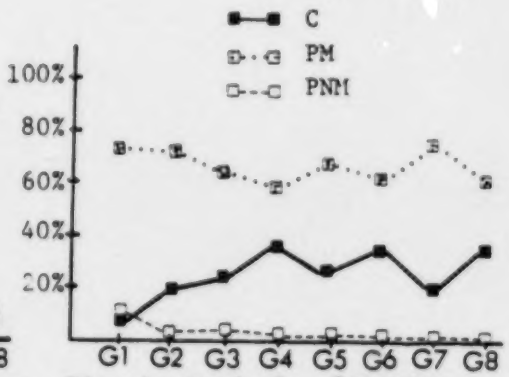


Fig. 4: Study 3: Pronouns
(Amount of Coreference
Judgments)

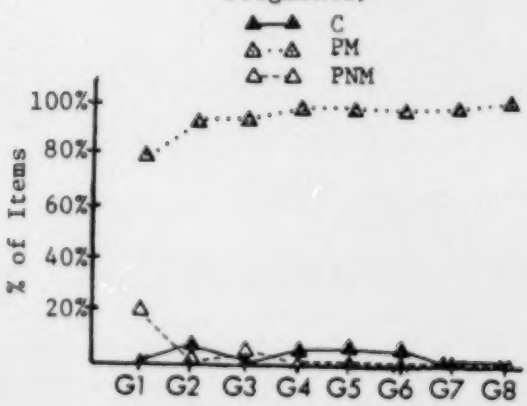


Fig. 5: Study 3: Gender Control
Pronoun
(Amount of Coreference
Judgments)

G1: 2;6(1)-3;0(0)
G2: 3;0(1)-3;6(0)
G3: 3;6(1)-4;0(0)
G4: 4;0(1)-4;6(0)
G5: 4;6(1)-5;0(0)
G6: 5;0(1)-5;6(0)
G7: 5;6(1)-6;0(0)
G8: 6;0(1)-6;6(0)

R: Reflexive
P: Pronoun
C: Child
PM: Puppet Mentioned
PNM: Puppet not Mentioned

increase of correct coreference judgments from the 50% chance level to a level of about 82% correct. The dashed line illustrates children's correct responses to the pronoun sentences. The line stays around the level of 60% correct and only increases a little bit at the end. These results indicate that there is more of a tendency for children younger than 5;6 to violate principle A than B when dealing with the prepositional sentences like (12) and (13). An opposite pattern is found for our older children (i.e., children who are older than 5;6). They seem to violate Principle B more often than to violate Principle A. In other words, at the age when children show firm knowledge of the c-command requirement on reflexives, they do it in both studies 1 and 2.

An analysis of children's responses to sentences with different verbs shows that the four verbs are not the same in difficulty for both the reflexive sentences and the pronoun sentences. For the reflexive sentences, children's responses vary from the level of 48% correct to the level of 74% correct. For the pronoun sentences, their responses vary from the level of 53% correct to the level of 78% correct. If we order the four verbs in terms of children's correct responses to them, the order is (point to > dress > touch > wash) for the reflexive sentences, and (touch > wash > dress > point to) for the pronoun sentences. The variability of children's responses to the four verbs is quite large. To some extent children tend to make their coreference judgments on the basis of the verb type rather than the anaphor type (i.e., the reflexive vs. the pronoun). This indicates that children may not understand the syntactic structure of the prepositional constructions tested in this study. When they are not quite sure about the structure of particular sentences, it is likely that they make judgments on the basis of some situational or pragmatic cues. This is especially likely given the almost opposite order of verbs for pronouns and reflexives. A verb-based response would predict this.

As can be seen from Figure 2 compared to Figure 1, the linear order of the antecedents in the test sentences does appear to affect children's coreference judgments. In study 2, this linear order factor increases children's correct judgments of the pronoun sentences and depresses their correct judgements of the reflexive sentences. For children younger than 5;6, the principle of minimum distance seems to play an important role in affecting their coreference judgments. However, the fact that children's ability to make coreference judgements varies significantly according to the verb type when dealing with the prepositional constructions (Study 2) but does not vary according to this nonstructural factor when dealing with the possessive constructions (Study 1), seems to suggest that linear order of the antecedents is not the only factor in affecting children's judgments. Children may know the structure of possessive constructions but not the structure of the prepositional constructions. In addition, if we look more closely at these two figures, it is clear that children older than 5;6 are not distracted by the linear order cue of the antedecents. No matter what kinds of sentences they are tested on (i.e., no matter whether the sentence

includes a possessive NP or a prepositional NP), children older than 5;6 show more of a tendency to violate principle B than to violate Principle A. They make significantly more correct judgements linking the reflexive and its c-commanding antecedent than linking the pronoun with its non-c-commanding antecedent.

Study Three

In our third study, we tested 156 children in the same age range as in the first and the second studies by using an acting-out task similar to the "Simon-says" game. We used sentences like those shown in (14) and (15) to test our female subjects and used sentences like (16) and (17) to test our male subjects.

(14) Kitty says that Sarah should point to herself.
(15) Kitty says that Sarah should point to her.
(16) Snoopy says thet Adam should point to himself.
(17) Snoopy says that Adam should point to him.

In our test sentences, Sarah was replaced by the name of the girl who was tested; Adam was replaced by the name of the boy who was tested. As in those sentences used in Studies one and two, the sentences tested in this study include two potential antecedents for their following reflexive or pronoun. These two antecedents both c-command the reflexive or the pronoun. However, only the embedded subject NP (i.e., the child's name) locally c-commands the object NP (i.e., the reflexive or the pronoun). For example in (14) and (15) Kitty and Sarah are the two potential antecedents for the reflexive 'herself' or the pronoun 'her'. Kitty and Sarah both c-command 'herself' or 'her', but only Sarah locally c-commands 'her' or 'herself'. In this study we tested children's sensitivity to the notion of local c-command and their sensitivity to the interaction between this notion and the binding principles A and B. We predicted that if children are sensitive to these structural properties, they should be able to co-index the reflexive to its local c-commanding antecedent, and not to co-index the pronoun to this local c-commanding antecedent. In addition to our sentences like (14)-(15), we also included a set of gender control pronoun sentences examplified in (18) and (19).

(18) Snoopy says that Sarah should point to him.
(19) Kitty says that Adam should point to her.

We used (18) to test our female subjects and (19) to test our male subjects. In both (18) and (19), the pronoun (him/her) has the same gender as its correct nonlocal c-commanding antecedent (i.e., the puppet's name mentioned in the sentence), and has a different gender from its incorrect local c-commanding antecedent (i.e., the child's name).

In our acting-out task, two puppets (one male puppet and one female) were presented to the child. The experimenter read a test sentence to the child and the child was asked to perform an action whenever he/she heard "Kitty says or Snoopy says". In this study we measured children's coreference judgments between the reflexive or the pronoun and its potential antecedents. Five different verbs

(touch, point to, scratch, pinch and tickle) were used. There were two items for each verb, yielding a total of 10 reflexive sentences, 10 pronoun sentences and 10 gender control sentences for each subject.

The results of this study are summarized in Figures 3,4 and 5. Children's coreference judgments to the puppet mentioned, the puppet not mentioned, or to the child himself/herself are compared for all three sentence types (i.e., the reflexive, the pronoun and the gender control pronoun sentences). The solid lines with black points represent the developmental pattern of children's coreference judgements between the reflexive or the pronoun and its local c-commanding antecedent (i.e., the child), the dashed lines with shaded points represent the developmental changes of children's coreference judgments between the reflexive or the pronoun and its nonlocal c-commanding antecedent (i.e., the puppet mentioned in the test sentences). The dashed lines with empty points represent children's coreference judgments between the reflexive or the pronoun and the puppet's name which is not mentioned in the test sentnce. The solid line in figure 3 shows that children's correct responses to the reflexive sentences grow from a level of 20% correct to a level of about 90% correct. For children younger than 4;6, there is more of a tendency for them to coindex the reflexive to the nonlocal c-commanding antecedent (i.e., the puppet mentioned in the test sentence) than to coindex this reflexive to its correct local c-commanding antecedent (i.e., the chilld himself/herself). Children older than 4;6 show an opposite pattern. They coindex the reflexive more frequently to the local c-commanding antecedent than to the nonlocal one. In a very few cases, children coindex the reflexive with the puppet's name which is not mentioned in the test sentences. As can be seen from figure 4, children's responses to the pronoun sentences do not change too much over development. The dashed line with shaded squares indicates that children's coreference judgments between the pronoun and the non-local c-commanding antecedent stay between the 64% level and the 78% level. About 28% of the time, children co-index the pronoun with its local c-commanding antecedent, and only in a few cases, they refer the pronoun to the puppet not mentioned in the test sentence. When comparing the solid line with black circles in Figure 3 with the dashed line with shaded squares in Figure 4, we find that, again, older children show more of a tendency to violate principle B than to violate principle A. To a certain degree, this result in Study 3 replicates our results shown in Study 1 and 2.

Figure 5 illustrates children's responses to the gender control pronoun sentences. The result indicates that when there is a gender match between the pronoun and its correct non-local c-commanding antecedent, children pay attention to this gender matching cue and make the right judgments perfectly. This result shows clearly that the children are paying attention to the sentence; they are not performing random actions.

Summary of Major Findings

The major empirical findings are summarized as follows:

1) Children older than 5;6 know the two major properties of anaphors that we have investigated. Namely, they know that the antecedent must c-command the reflexive (studies 1 and 2 demonstrate this) and they know that the antecedent must be local (study 3 demonstrates this).
2) Children in the same age range (5;6 to 6;6) still do not show that they have the knowledge that a pronoun may not have a local c-commanding antecedent.
3) Children's performance on the c-command property of reflexives increases continuously from the chance level at age 2;6 to almost perfect performance at 6;6. Performance on the locality property of the antecedent for reflexives increases from about 20% at 2;6 to almost perfect performance at 6;6. Further studies will be necessary to determine the reason why the youngest children choose a non-local antecedent for the reflexive. The question is, does this represent part of children's grammatical knowledge at this age, or are other factors, for example, saliency of the puppet in the experiment, determining the results at this age?
4) Children's performance on the requirement that pronouns not have a local c-commanding antecedent stays roughly flat from 2;6 to 6;6, with only a slight improvement in the oldest age group, still remaining at only about 70% correct, while chance performance is 50%. This flat curve is in direct contrast to the steady increase for the reflexive.

The fact that there is a steady increase in performance from younger to older children does not mean that the younger children do not know Principle A, that is, the three binding properties for reflexives. The strongest hypothesis is Lexical Learning Hypothesis: only lexical items items have to be learned. For example, the child has to learn that herself is an anaphor and her is a pronoun, but the Principles themselves operate in the child at a much earlier stage. Thus the increase in performance reflects the fact that lexical learning must take place.

Thus from the stand-point of a natural acquisition theory--the Lexical Learning Hypothesis--the development of reflexives makes sense. Pronouns, however, appear to constitute a problem. Namely, even at age 6;6 there are large numbers of violations of the requirement that pronouns not have a local c-commanding antecedent. Moreover, there is only very little improvement from the youngest to the oldest children. Performance on this property simply does not appear to develop in this age range.

One possibility might be that the children simply have not learned that the pronoun is a pronoun. Perhaps they think it is an anaphor. (Jakubowicz 1984 suggests that this is true for children around 3-4). This seems wrong, however, on two counts. First, as Manzini and Wexler 1984 point out, children at this age have the free use of the pronoun, so they know it's not an anaphor. Second, in our studies, the children don't treat the pronoun as an anaphor, which

would predict a 0% performance on all three of our studies. But performance at the oldest ages in our studies on pronouns is from 70-80%. Thus it is clear that the children do not treat the pronoun as an anaphor, at any of our age groups.

Given that children have the free use of the pronoun, it seems reasonable to conclude that they know that him and her are pronouns (this follows from the Lexical Learning Hypothesis, since Principle A does not allow a reflexive to not have an antecedent). But if they know that the relevant items are pronouns, they shoud know (again, by the Lexical Learning Hypothesis) the property (Principle B) that pronouns do not have a local c-commanding antecedent. But then why do we have the pattern of violations of this property for all our age groups?

One answer would be to say that Principle B is itself learned. This will violate the Lexical Learning Hypothesis. At the moment there seems to be no evidence in favor of such a solution, and it complicates the theory of language learning. Also, while it is possible, there seems to be no particular reason that Principle B should be learned (or mature) while Principle A doesn't. Furthermore, on learnability grounds (given, for example, the generally accepted lack of negative data for the child), it is difficult to imagine how Principle B could be learned. Of course, it remains an empirical question whether this is so.

There is one other possible answer. Namely we could reformulate Principle B. And we could claim that children have this (correct) Principle B. The reformulation would say that only pronouns as bound variables are subject to Principle B. (For example, him is a bound variable in "Every bear says that Kitty should give him a pencil", in one reading). "John likes him", with John and him coreferential would then be ungrammatical for other reasons, not by Principle B. Reinhart (1983) suggests that pragmatic factors will make this sentence sound bad. Montalbetti and Wexler (1985) develop such a theory of binding, where the essential notion is not co-reference, but rather is linking, in the sense of Higgenbottham.

We would then suggest that the reason that children don't show good knowledge of Principle B (and don't improve in our age range) is that they haven't learned the (pragmatic, or whatever) principles that rule out local binding of pronouns when the pronouns are not variables. When these pragmatic factors are (later) learned, performance will improve. The essential grammatical knowledge is there from an early age, however.

This hypothesis makes a very explicit prediction. Namely, if the pronoun is a bound variable, then children at age 6 (when they perform well on anaphors) shouldn't show violations of Principle B. The viollations should only appear when the pronoun is referential. We are currently conducting the appropriate studies. If the results are as predicted, this will be strong evidence for the reformulation of binding theory as here proposed. Namely, a very simple and natural theory of language acquisition (the Lexical Learning Hypothesis) will be strongly supported, together with a very simple and natural theory of binding.

References

Borer, H. (1984). Parametric Syntax. Foris Publications: Dordrecht.

Borer, H. & Wexler, K. (in press). The maturation of syntax. To appear in T. Roeper & E. Williams (Eds.) Parameters and linguistic theory.

Chomsky, N. (1981). Lectures on government and binding. Dordrecht: Foris.

Jakubowicz, C. (1984). On markedness and binding principles. NELS, 14.

Montalbetti, M. & Wexler, K. (in press). Binding is linking. To appear in WCCFL: IV.

Reinhart, T. (1983). Anaphora and semantic interpretation. Chicago: University of Chicago Press.

Wexler, K. & Manzini, R. (in press). Parameters and learnability in binding theory. To appear in T. Roeper & E. Williams (Eds.) Parameters and linguistic theory.